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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,847	04/18/2001	Takao Nirasawa	09792909-4995	9131

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SONNENSCHEIN NATH & ROSENTHAL  
P.O. BOX 061080  
WACKER DRIVE STATION  
CHICAGO, IL 60606-1080

[REDACTED] EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

TC-5

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/837,847	NIRASAWA ET AL.
Examiner Gregg Cantelmo	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.
 

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. No IDS appears to have been filed with the application prior to this office action.

***Drawings***

3. The drawings received April 18, 2001 are acceptable for examination purposes.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claims 1-2, the phrase "and derivatives thereof" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "and derivatives thereof"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). The specification does not clearly define

this phrase and therefore one of ordinary skill in the art would not have readily understood which derivates were appreciated by the instant invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 09 180 757 A (JP '757).

JP '757 discloses a solid (non-aqueous) electrolyte secondary battery (abstract) comprising a positive electrode having a positive electrode active material (paragraph [0022]), a negative electrode containing a negative electrode active material capable of being doped with lithium (paragraphs [0016] [0017] and [0022]) and a solid (non-aqueous) electrolyte, wherein the solid (non-aqueous) electrolyte comprises thiophene (abstract as applied to claim 1).

The thiophene is in a weight percentage from 0.05-5 percent by weight based upon the total weight of the electrolyte (abstract as applied to claim 2).

While claim 3 defines the particular of the thiol, claim 3 does not positively require that the thiol is selected from the group of materials in claim 1. Thus the limitations of claim 3 would only be accorded weight provided that claim 3 clearly limited the thiol as the material added to the electrolyte (as applied to claim 10). Since it does not, and the prior art selects another material (thiophene), claim 3 does not further limit the invention relative to the application of the JP '757 reference (as applied to claim 3).

The positive electrode comprises a lithium-containing metal oxide (paragraph [0022] as applied to claim 4).

The positive electrode comprises a composite oxide of lithium and a transition metal represented by the formula  $\text{LiM}_x\text{O}_y$ , and by example can be  $\text{LiCoO}_2$ ,  $\text{LiMn}_2\text{O}_4$ ,  $\text{LiNiO}_2$ , etc (paragraph [0022] as applied to claim 5).

The negative electrode active material comprises a carbonaceous material (paragraph [0016] as applied to claim 6).

The negative electrode active material comprises a carbonaceous material (paragraph [0016] as applied to claim 7).

The negative electrode active material comprises a carbonaceous material selected from graphite (paragraph [0031] as applied to claim 8).

With respect to claim 9, weight has only been given to structural components recited therein and no to the method of forming the electrode since the method of forming the product is not germane to the product claim itself. More particularly, the

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non-aqueous electrolyte includes a solid electrolyte (title and abstract) containing an electrolyte salt such as LiClO<sub>4</sub> in an organic polymer (Example 1, paragraph [0023]).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113 (as applied to claim 9).

The polymer matrix material can be polyacrylonitrile (paragraph [0020] as applied to claim 10).

The electrolyte salt is a lithium salt of LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiClO<sub>4</sub>, etc. (paragraph [0021] as applied to claim 11).

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9. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent No. 6,413,677 B1 (Hamamoto).

Hamamoto discloses a non-aqueous electrolyte secondary battery (abstract lines 1-2) comprising a positive electrode having a positive electrode active material (col. 6, II. 53-65), a negative electrode containing a negative electrode active material capable of being doped with lithium (col. 7, II. 1-13) and a non-aqueous electrolyte, wherein the non-aqueous electrolyte comprises a thiol (col. 2, II. 36-40 as applied to claim 1).

The thiol is in a weight percentage from 0.01-10 percent by weight based upon the total weight of the electrolyte (prior art claim 7 as applied to claim 2).

A thiol salt such as benzenethiolate is employed and is held to be a derivative of benzenethiol (col. 10, Example 12, line 48 as applied to claim 3).

The positive electrode comprises a lithium-containing metal oxide (col. 6, II. 53-58 as applied to claim 4).

The positive electrode comprises a composite oxide of lithium and a transition metal represented by the formula  $\text{LiM}_x\text{O}_y$ , wherein M can be Co, Ni, Mn, Fe, and V and by example can be  $\text{LiCoO}_2$ ,  $\text{LiMn}_2\text{O}_4$ ,  $\text{LiNiO}_2$ , etc (col. 6, II. 53-58 as applied to claim 5).

The negative electrode active material comprises a carbonaceous material (col. 7, II. 1-2 as applied to claim 6).

The negative electrode active material comprises a carbonaceous material (col. 7, II. 1-2 as applied to claim 7).

The negative electrode active material comprises a carbonaceous material selected from graphite (col. 7, II. 1-7 as applied to claim 8).

With respect to claim 9, weight has only been given to structural components recited therein and no to the method of forming the electrode since the method of forming the product is not germane to the product claim itself. More particularly, the non-aqueous electrolyte includes an electrolyte salt and a non-aqueous solvent (col. 6, II. 34-46.

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113 (as applied to claim 9).

While claim 10 defines the particular of the polymer matrix, claim 10 does not positively require that the polymer matrix is the selected non-aqueous electrolyte. Hamamoto discloses a non-aqueous electrolyte other than a polymer matrix but within the group of claim 9. Thus the limitations of claim 10 would only be accorded weight provided that claim 10 clearly limited the electrolyte to the polymer matrix (as applied to claim 10).

The electrolyte salt is a lithium salt of LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiClO<sub>4</sub>, etc. (col. 6, ll. 34-36 as applied to claim 11).

#### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto in view of Linden "Handbook of Batteries" (hereinafter referred to as Linden).

The teachings of claim 1 with respect to Hamamoto have been discussed above and are incorporated herein.

The differences not yet discussed are of the particulars of the cell defined in claim 12.

Hamamoto teaches that the configuration of the battery is not limited. It can be a cylindrical battery having a cathode, anode and a roll-like separator. Thus there is a

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suggestion of using the cell in a spirally wound arrangement and disposed within an exterior casing.

Linden discloses that spirally wound configurations for lithium batteries (both primary and secondary batteries) is well known (see pages 14.49, 14.50 and 36.29). The anode and cathode (a thin, pasted electrode on a supporting grid structure) are wound together with a separator interspaced between the two thin electrodes to form the jellyroll construction (page 14.49). The structure is then disposed in a cylindrical can (Fig. 14.41).

The motivation for using the spirally wound configuration is to provide a battery for use in high-current pulse operations as well as continuous high-rate operation (page 14.49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Hamamoto by configuring the cell of Hamamoto to be a spirally wound arrangement having the electrodes and separator stacked and wound and disposed in the exterior casing since it would have provided a spirally wound configuration for use in high-current pulse operations as well as continuous high-rate operation.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '757 in view of Linden "Handbook of Batteries" (hereinafter referred to as Linden).

The teachings of claim 1 with respect to JP '757 have been discussed above and are incorporated herein.

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The differences not yet discussed are of the particulars of the cell defined in claim 12.

Linden discloses that spirally wound configurations for lithium batteries (both primary and secondary batteries) is well known (see pages 14.49, 14.50 and 36.29). The anode and cathode (a thin, pasted electrode on a supporting grid structure) are wound together with a separator interspaced between the two thin electrodes to form the jellyroll construction (page 14.49). The structure is then disposed in a cylindrical can (Fig. 14.41).

The motivation for using the spirally wound configuration is to provide a battery for use in high-current pulse operations as well as continuous high-rate operation (page 14.49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Hamamoto by configuring the cell of JP '757 to be a spirally wound arrangement having the electrodes and separator stacked and wound and disposed in the exterior casing since it would have provided a spirally wound configuration for use in high-current pulse operations as well as continuous high-rate operation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00

a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gregg Cantelmo  
Patent Examiner  
Art Unit 1745

gc



November 21, 2002